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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------|-------------|----------------------|---------------------|------------------|
| 10/733,304 | 12/12/2003 | Hiroyuki Urakami | 041514-5318 | 7325 |
| 55694 | 7590 | 08/08/2006 | EXAMINER | |
| DRINKER BIDDLE & REATH (DC) | | | SHERMAN, STEPHEN G | |
| 1500 K STREET, N.W. | | | | |
| SUITE 1100 | | | ART UNIT | PAPER NUMBER |
| WASHINGTON, DC 20005-1209 | | | | 2629 |

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/733,304 | URAKAMI ET AL. |
| | Examiner Stephen G. Sherman | Art Unit 2629 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 December 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-6 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) 4-6 is/are allowed.
 6) Claim(s) 1-3 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 10 March 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (JP 2001-067041) in view of Suzuki (US 2003/0122743).

Regarding claims 1, Takahashi discloses a display device including a display panel (Drawing 4 shows a display device containing plasma display panel 65.), wherein signal is divided into a plurality of each field of an image subfields, the display panel includes a plurality of pixel cells for each pixel, and gray scale display is performed by

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based on the selectively causing emission in the pixel cells image signal for each of the subfields (Paragraph [0015] explains that an incoming digital video signal 1, shown in Figure 1, is divided into sub-fields and that the number of cells lit in each subfield determines the gradation level.), the display device comprising:

a circuit for generating frequency data indicating a number of pixels that are lit for each field of the image signal (Figure 2 and paragraph [0023] explain that the subfield conversion configuration section 31 converts a digital video signal 1 into a subfield configuration and then counter 32 counts the number of lighted cells for every subfield.); and,

a controller for adjusting the subfields for emission within each pixel, based on the frequency data of the pixels concerned (Figure 2 and paragraphs [0025] and [0027] explain that the comparator 41 judges the number of additional pulses to be added and that selector 71 chooses the predetermined subfield and updates the pulse number in the subfield.).

Takahashi fails to teach that the display device comprises:

a brightness frequency data circuit for generating brightness frequency data indicating a number of pixels at each of the same brightnesses in a brightness distribution for each field of the image signal; and,

a controller for adjusting, for each of at least two brightness regions, a number of subfields for emission at each brightness within each brightness region, based on the brightness frequency data of the brightness concerned.

Suzuki discloses of a display device comprising:

a brightness frequency data circuit for generating brightness frequency data indicating a number of pixels at each of the same brightnesses in a brightness distribution for each field of the image signal (Figures 1-6 and paragraph [0041] explain that the ON level discriminator 33 detects the display area ratio by detecting the number of regions r which are above a certain brightness threshold level and these pixels are ON, and which regions are turned off, i.e. below the threshold brightness level. This means that the number of OFF regions are determined, these pixels all having the same brightness level.); and,

a controller for adjusting, for each of at least two brightness regions, a number of subfields for emission at each brightness within each brightness region, based on the brightness frequency data of the brightness concerned (Paragraph [0042] explains that the frequency adjuster 34 shown in Figure 1 changes the number of sustain pulses in a subfield such that the luminance in each display region satisfies the reference value. This means that each display region r of each brightness has its number of sustain pulses in the subfield adjusted according to the reference value, or in other words that controller adjusts a number of subfields for emission at each brightness region, and this is based off of the display area ration obtained from the On level discriminator 33.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of adjusting a number of subfields in different brightness regions as taught by Suzuki with the display device taught by Takahashi such that the display device of Takahashi would adjust the brightness level based on the frequency of brightness data in order to provide a plasma display device

where luminance can always be corrected to its reference value to consequently achieve proper expression of preset gradations.

Regarding claim 2, Takahashi and Suzuki disclose the display device according to Claim 1.

Suzuki also discloses wherein the controller increases the number of the subfields used for the brightness region when a number indicated by the brightness frequency data is larger than a predetermined value (Paragraph [0075] explains that in a different embodiment that a video signal corresponding to 7-bits can be changed into one with 8-bits in accordance with an upper reference voltage, meaning that the number of subfields is changed from 7 to 8.).

Therefore it would have been obvious to “one of ordinary skill” in the art at the time the invention was made to use the second embodiment taught by Suzuki with the combination of the first embodiment of Suzuki and Takahashi such that the number of subfields used for display is changed in order to allow for the number of gradations to be expressed by full bits while simultaneously adjusting the luminance by the sustain frequency in accordance with an increase of the light emission time.

Regarding claim 3, Takahashi and Suzuki disclose the display device according to Claim 1.

Suzuki also discloses wherein the greater a number of the subfields used for the brightness region, the more the controller shortens a period of emission of the pixel cells performed in each subfield (As explained above the number of subfields is increase and the frequency is then reduce to produce proper gradation, as explained in paragraphs [0075] and [0078]-[0079].).

Allowable Subject Matter

4. Claims 4-6 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The primary reason for allowance is the recitation of the "brightness frequency data circuit," "logarithmic conversion circuit," "clipping circuit," "cumulative brightness frequency data circuit," and the "delimiter value generation circuit" all working in conjunction with each other to produce the values which allow for the driving of the pixels, the structure not found singularly or in combination in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

28 July 2006

AMR A. AWAD
PRIMARY EXAMINER
Amr Ahmed Awad